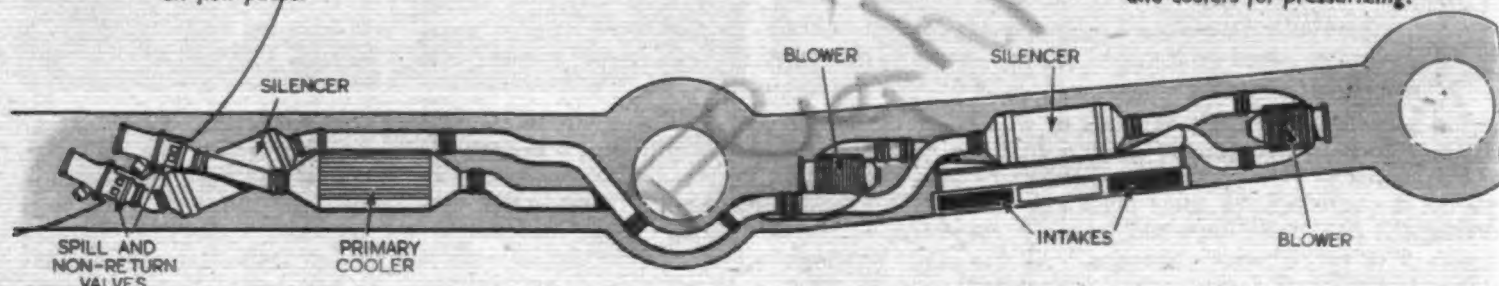


Above: typical sections through cabin, showing fresh air, exhaust, and recirculated air flow paths.

Below: port wing leading-edge, showing arrangement of intakes, blowers, silencers and coolers for pressurizing.

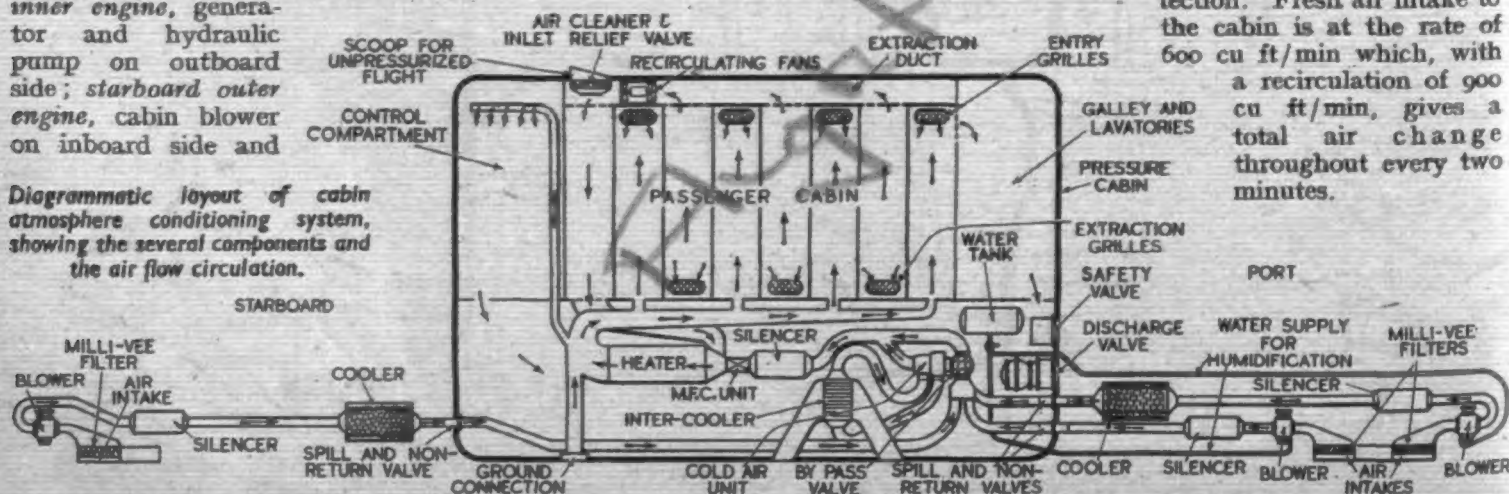


A.W. APOLLO

is of the order of 400 deg C, which, of course, is very much above that required for de-icing, and it is for this reason that cold air is introduced, the thermostat being employed to hold the temperature of the mix at somewhere between 150 and 170 deg C. From the mixing chamber, the hot gases are directed to the leading-edge ducts, where they issue through metering holes and flow through the chordal passages of a corrugated director shroud against the interior surfaces of the leading-edge skinning, to escape through apertures in the front spar, flow through the wing and then finally exhaust to atmosphere. The discharge to atmosphere in the tail surfaces is made through holes at the tips. These thermal ducts for de-icing are furnished to 57 per cent of the wing span, 80 per cent of the tailplane span and about 70 per cent of the fin height.

The Apollo's power installation is straightforward and simple. From the four pick-up points on the firewall of each Mamba, tubular steel struts with diagonal bracing extend back to the booms of the front spar, attaching to these with forged h.t.s. gusset-plate end-fittings. The jet exhaust is conducted through the wing and is carried up to eject over the trailing edge through a tail pipe; this is located in rollers at the front and in swing links at the rear in order to accommodate thermal expansion. On each Mamba, an auxiliary drive shaft extends back along the top of the engine to a bevel gearbox mounted in the leading edge above the main spar, and with subsidiary drive shafts sloping down on each side to unit gearboxes for the mounting and drive of various auxiliary units. These are as follows: *port outer engine*, cabin blower on inboard side; *port inner engine*, cabin blower on outboard side, and generator and hydraulic pump on inboard side; *starboard inner engine*, generator and hydraulic pump on outboard side; *starboard outer engine*, cabin blower on inboard side and

Diagrammatic layout of cabin atmosphere conditioning system, showing the several components and the air flow circulation.



generator on outboard side. The cabin blowers are Marshall 15 lb/min units, the hydraulic pumps are Lockheed Mk. VI units, whilst the generators are Rotax 6 kW units. The engine cowlings rearward of the compressor delivery station are aircraft parts and are arranged in upper and lower pairs, hinged along ridge and keel and secured with Napier flush toggle-action fasteners.

In its pressurization and cabin atmosphere control installation, the Apollo conforms to accepted practice, but it has the additional refinement of a cold-air unit incorporated in the circuit to effect air-drying in conditions of high ambient relative humidity. Each of the Roots-type cabin blowers has an individual Milli-Vee filter air intake and delivers through individual silencers. The blowers on the outboard engines feed through primary air-to-air inter-coolers, and only the blowers on the port engines are supplied with water for humidifying. This latter quality is in line with the latest ideas on this subject and, briefly, embraces the supply of water to the interior of the blower, the action of which finely atomizes the water, so that the air delivered by the blower is at the requisite relative humidity. Delivery from the three blowers is taken to a common by-pass valve which, according to the conditions required, either delivers to, or by-passes, the Godfrey air turbine refrigerator unit (for air-drying action). From this point, the airflow is through a combined secondary silencer and water-separator unit, thence through a Normalair mass-flow control unit to a heater prior to delivery to the cabin.

From the distribution ducts running below the floor, the air is led up the fuselage walls in the inter-frame spaces to enter the cabin at wall-ceiling level through louvred grills. Insulation is provided by two layers of Fibreglass blanket over the free flanges of the stringers, whilst the free air spaces between the stringers also afford additional protection. Fresh air intake to the cabin is at the rate of 600 cu ft/min which, with a recirculation of 900 cu ft/min, gives a total air change throughout every two minutes.